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ART. XI.—*The Mornington Earth Tremor of 3rd September, 1932.*

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An earth tremor of unusual intensity for Southern Australia was felt in the south-central part of Victoria on the morning of 3rd September, 1932. It was recorded by the Milne-Shaw seismograph at the Melbourne Observatory, which instrument is set to record the E.-W. component of earth movements. The following measurements are taken from the record:—

i	..	..	4h 22m 32s	(Victorian Standard Time)
i	..	..	22	34
i	..	..	22	38
M	..	..	22	39
m	..	..	22	42
m	..	..	22	52
m	..	..	23	35
F	..	..	25	0

Owing to the comparatively slow speed of travel of the paper (8 mm. per minute) it is not possible to measure the period, but it was obviously very short. The maximum amplitude of vibration was 10 mm. corresponding to an earth movement of 40μ . Since the record is compressed into such a short space, it has not been possible to identify the various phases. If the first impulse be identified with P (longitudinal waves), an estimate of the distance of the epicentre from the Melbourne Observatory can be made from the interval M-P (M being the largest amplitude of the surface waves). This leads to the value $0^{\circ}.35$, say 24 miles, but the weight of this determination is small.

The tremor was also recorded on the seismographs at the Adelaide Observatory and the Riverview College Observatory, the directors of which kindly supplied such information as could be obtained from their records. Unfortunately these yielded little help in the location of the epicentre owing to the smallness of the amplitudes of the traces and the impossibility of identifying the different phases.

In order to locate the epicentre, a questionnaire was prepared on the basis of the modified Mercalli scale of intensities(1), and this was published by the courtesy of the Melbourne press. Upwards of 200 replies were received from about 110 localities. A numerical value was then assigned to each locality and lines were drawn on the map, bounding areas of equal intensity. It was not thought to be worth while to draw in the boundaries for intensities lower than four on the Mercalli scale. These lines are shown on the map in Fig. 1. The shape of the lines over Port Phillip Bay must remain a matter of conjecture owing

to the unavoidable absence of observations from that area. In the light of all the information collected the epicentre has been located at $38^{\circ} 15' S.$, $145^{\circ} E.$, which is in moderate agreement with the result deduced from the seismogram.

The absence of symmetry in the propagation of the vibrations through the earth was most marked. These were transmitted freely towards the north, south, and east, but were subject to heavy damping when travelling towards the west. This can hardly be ascribed to the effect of the sea, as the vibrations seemed to be unaffected by the presence of the waters of Western Port.

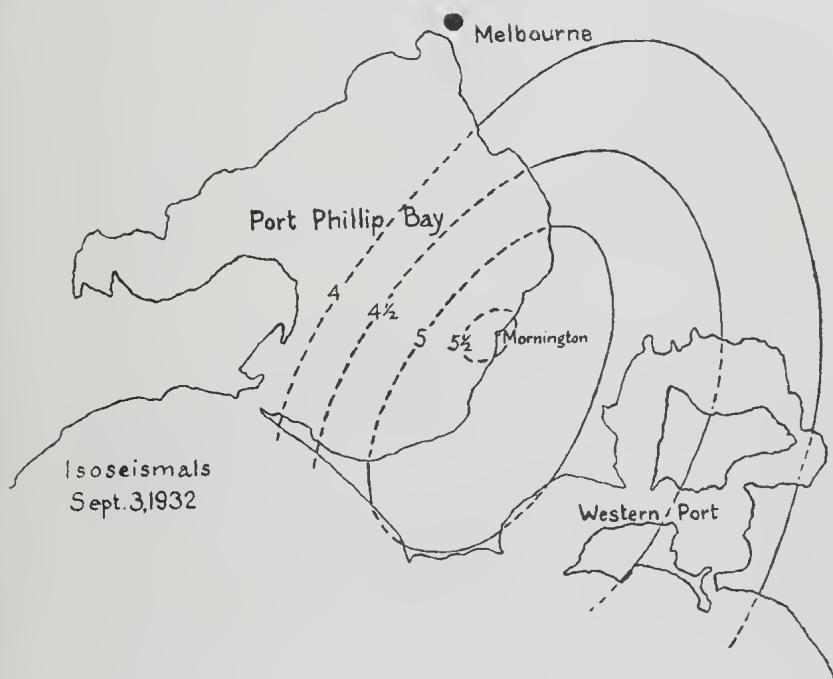


FIG. 1.

As is quite usual, sounds were reported to have preceded, accompanied, or followed the tremors. At places where the vibrations were heavy the sounds were likened to heavy explosions, but in the more distant places they were likened to distant thunder. There is no consistent evidence of any appreciable time interval between the arrival of the sound and the shaking.

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Bibliography.

1. WOOD and NEUMANN. *Bull. Seism. Soc. Amer.*, xxi, p. 277, 1931.